



IEEE Std 1455 – 1999

February 2000

**Standard for Message Sets for Vehicle/Roadside
Communications**

Overview

This standard is applicable to dedicated short-range communications (DSRC). Within the overall context of DSRC operations, this standard specifies the message set, data dictionary and communications protocols above the open systems interconnection (OSI) data link layer for the DSRC wireless interface. These communications protocols define the low-level commands used to control transponder resources and thereby enable message transfer. This standard also specifies the resources that may be present on a vehicle's transponder and the means by which the roadside equipment can control those on-board equipment resources.

What is this standard for?

This standard, in conjunction with related standards governing the data link (ASTM PS105-99) and physical (ASTM PS111-98) layers of the DSRC protocol stack, provides the basis for interoperable, non-interfering DSRC implementations using equipment from multiple vendors. These implementations include commercial vehicle applications, toll collection, and border crossing applications.

Who uses it?

This standard is intended for equipment manufacturers, system integrators, toll and turnpike agency engineers and procurement specialists, research consultants and other interested individuals and groups.

How is it used?

This standard may be used in several ways by various DSRC equipment stakeholders, including manufacturers that develop compliant transponders. In addition, it can be used by roadside equipment manufacturers to develop equipment that communicates with such transponders. Transponder and beacon manufacturers should note the internal resources that must be provided within, and commands that are recognized by, compliant transponders. Manufacturers of roadside equipment utilize protocols found in this standard to complete the communications stack between the data link layer and application-level processing. Finally, ITS application developers (such as engineers for toll or turnpike agencies) who design and implement systems that use DSRC can utilize the messages that transfer information between related applications.

Scope

This standard specifies:

- Overall DSRC architecture;
- Scope and organization of the resources provided on compliant transponders;
- Commands that are used to control transponders and memory areas used to store information;
- Roadside resource manager that arbitrates requests for transponder usage;
- ITS application-specific messages that may be stored in the transponder memory areas; and
- Services that are used to connect the upper layer processing with the DSRC data link layer.

This standard also indicates the manner in which new systems achieve backward compatibility or noninterference with existing systems.

To obtain a copy of this standard, please contact:

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Related documents

ANSI X3.38-1988 (R1994) – Codes - Identification of States, the District of Columbia, and the Outlying and Associated Areas of the United States for Information Interchange

[ASTM PS111-98 – Specification for Dedicated Short Range Communication \(DSRC\) Physical Layer Using Microwave in the 902 to 928 MHz Band](#)

[ASTM PS105-99 – Specification for Dedicated Short Range Communication \(DSRC\) Data Link Layer: Medium Access and Logical Link Control](#)

CEN Draft Document: prENV278/9/#65 Dedicated Short Range Communication (DSRC) - Application Layer (Layer 7)

[IEEE Std 1489-1999 – Standard for Data Dictionaries for Intelligent Transportation Systems - Part 1: Functional Area Data Dictionaries](#)

GSS Global Specification for Short Range Communication. The platform for Interoperable Electronic Toll Collection and Access Control

ISO 3166-1:1997 – Codes for the representation of names of countries and their subdivisions - Part 1: Country codes

ISO 3779:1983 -- Road vehicles - Vehicle identification numbering (VIN) - Content and structure

ISO/IEC 7498-1:1994 -- Information technology - Open Systems Interconnection- Basic Reference Model: The Basic Model

ISO 7498-2:1989 – Information processing systems - Open Systems Interconnection - Basic Reference Model - Part 2: Security Architecture

ISO/IEC 7498-3:1997 -- Information technology - Open Systems Interconnection- Basic Reference Model: Naming and addressing

ISO/IEC 7498-4:1989 -- Information processing systems - Open Systems Interconnection - Basic Reference Model - Part 4: Management framework

ISO 3780:1983 -- Road vehicles - World manufacturer identifier (WMI) code

ISO/IEC 8824-1:1995 -- Information technology - Abstract Syntax Notation One (ASN.1): Specification of basic notation

ISO/IEC 8825-2:1996 -- Information technology - ASN.1 encoding rules: Specification of Packed Encoding Rules (PER)

ISO TC204 WG15 Committee Of Japan TICS/DSRC - DSRC Application Layer High Data Rate